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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,589	10/20/2003	Byung-cheol Song	Q77338	2529

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EXAMINER

RAO, ANAND SHASHIKANT

ART UNIT	PAPER NUMBER
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2621

DATE MAILED: 05/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/687,589	<b>Applicant(s)</b> SONG ET AL.	
	<b>Examiner</b> Andy S. Rao	<b>Art Unit</b> 2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-7 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

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## DETAILED ACTION

### *Specification*

1. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

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3. Claims 1-2, and 4 are rejected under 35 U.S.C. 102(e) as being anticipated by Wang et al., (US Patent 6,570,922 hereinafter referred to as "Wang").

Wang method for encoding a video signal with a variable bit rate (Wang: figures 4a-4c), the method comprising: calculating a complexity for each of a plurality of pictures on the basis of a bit amount and a quantization parameter of a previous frame (Wang: column 7, lines 25-35); calculating a remaining bit amount for each picture in proportion to the complexity for each picture calculated (Wang: column 7, lines 45-65); calculating a quantization parameter of a current frame on the basis of the complexity for each picture and the remaining bit amount for each picture calculated (Wang: column 28, lines 40-47); and comparing the quantization parameter of the current frame calculated with a predetermined minimum quantization parameter and determining a final quantization parameter (Wang: column 7, lines 48-52), as in claim 1.

Regarding claim 2, Wang discloses wherein the remaining bit amount for each picture is obtained by multiplying the complexity for each picture by a total bit amount of remaining frames for each picture (Wang: column 7, lines 30-65), as in the claim.

Regarding claim 4, Wang discloses that the quantization parameter of is obtained by dividing an average complexity for each the current frame picture by the remaining bit amount for each picture (Wang: column 8, lines 40-55), as in the claim.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al., (US Patent 6,570,922 hereinafter referred to as "Wang") in view of Liu et al., (US Patent 6,959,042 hereinafter referred to as "Liu").

Wang discloses a method for encoding a video signal with a variable bit rate (Wang: figures 4a-4c), the method comprising: calculating a complexity for each of a plurality of pictures on the basis of a bit amount and a quantization parameter of a previous frame (Wang: column 7, lines 25-35); calculating a remaining bit amount for each picture in proportion to the complexity for each picture calculated (Wang: column 7, lines 45-65); calculating a quantization parameter of a current frame on the basis of the complexity for each picture and the remaining bit amount for each picture calculated (Wang: column 28, lines 40-47); and comparing the quantization parameter of the current frame calculated with a predetermined minimum quantization parameter and determining a final quantization parameter (Wang: column 7, lines 48-52), as in claim 5. However, Wang fails to disclose wherein in determining the final quantization parameter, the predetermined minimum quantization parameter is determined to be the final quantization parameter if the quantization parameter of the current frame is smaller than the predetermined minimum quantization parameter, and the quantization parameter of the current frame is determined to be the final quantization parameter if the quantization parameter of the current frame is greater than the predetermined minimum quantization parameter, as in the claim. Liu discloses a quantization method (Liu: column 12, lines 55-63) which determines a final quantization parameter in determining the final quantization parameter (Liu: column 13, lines 10-21), the predetermined minimum quantization parameter is determined to be the final

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quantization parameter if the quantization parameter of the current frame is smaller than the predetermined minimum quantization parameter (Liu: column 14, lines 45-52) , and the quantization parameter of the current frame is determined to be the final quantization parameter if the quantization parameter of the current frame is greater than the predetermined minimum quantization parameter (Liu: column 14, lines 53-67) in order to have quantization methods account for scene change detection in the coded video data (Liu: column 7, lines 35-50), as in the claim. Accordingly, given this teaching, it would have been obvious for one of ordinary skill in the art to incorporate the Liu final quantization parameter determination steps into the Wang method in order to have the Wang method account for detected scene changes in the coded video data. The Wang method, now incorporating the Liu final quantization parameter determination steps, has all of the features of claim 5.

Wang discloses an apparatus for encoding a video signal (Wang: figure 6), the apparatus comprising: a discrete cosine transform (DCT) unit which performs DCT on input image data in units of macroblocks (Wang: column 6, lines 42-47); a bit rate controller which determines a quantization parameter of a current frame (Wang: column 28, lines 45-57), on the basis of a bit amount for each picture and a complexity for each picture generated per frame (Wang: column 7, lines 25-67); a quantization unit which quantizes the image data subjected to DCT by the DCT unit according to the quantization parameter determined by the bit rate controller (Wang: column 28, lines 40-44), as in claim 6. However, even though Wang discloses that the transcoders are capable of decoding already compressed video streams (Wang: column 28, lines 40-45), it fails to explicitly disclose decoding elements such a dequantization unit which dequantize the image data quantized by the quantization means; an Inverse Discrete Cosine Transform (IDCT) unit

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which performs DCT on the image data dequantized by the dequantization unit; a frame memory which stores the image data subjected to IDCT by the DCT unit, in units of frames; and a movement estimation and compensation unit which estimates a movement vector and a Sum of Absolute Difference (SAD) using image data of an input current frame and image data of an immediately preceding frame stored in the frame memory, and compensates for movement using the movement vector, as in claim 6. Liu discloses that for a transcoder, it is known to decode already compressed bitstreams using decoding elements such a dequantization unit which dequantize the image data quantized by the quantization means (Liu: figure 4, element 164); an Inverse Discrete Cosine Transform (IDCT) unit which performs DCT on the image data dequantized by the dequantization unit (Liu: figure 4, element 166); a frame memory which stores the image data subjected to IDCT by the DCT unit, in units of frames (Liu: figure 4, element 130); and a movement estimation and compensation unit which estimates a movement vector and a Sum of Absolute Difference (SAD) using image data of an input current frame and image data of an immediately preceding frame stored in the frame memory (Liu: figure 4, element 168), and compensates for movement using the movement vector (Liu: column 6, lines 4-15), in order to help recode the bitstreams particularly if the resolutions need to be changed (Liu: column 6, lines 40-54), as in the claim. Accordingly, given this teaching, it would have been obvious for one of ordinary skill in the art to incorporate the Liu decoding elements into the transcoder of Wang in order to help the Wang apparatus recode bitstreams to effect changes in resolution. The Wang apparatus, now incorporating the Liu decoding elements, has all of the features of claim 6.

Regarding claim 7, the Wang apparatus, now incorporating the Liu decoding elements, has a bit rate controller a complexity calculator which calculates the complexity for each picture on the basis of the bit amount of each frame in the picture and the quantization parameters (Wang: column 7, lines 20-35); a remaining bit amount calculator which calculates a remaining bit amount for each picture in proportion to the complexity calculated by the complexity calculator (Wang: column 7, lines 55-65); and a quantization parameter determination unit which determines the quantization parameter on the basis of the complexity for each picture and the remaining bit amount for each picture calculated by the complexity calculator and the remaining bit amount calculator (Wang: column 28, lines 40-60), as in the claim.

#### ***Allowable Subject Matter***

6. Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Burns (US Patent: 6,760,377) discloses signal processing.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andy S. Rao whose telephone number is (571)-272-7337. The examiner can normally be reached on Monday-Friday 8 hours.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571)-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Andy S. Rao  
Primary Examiner  
Art Unit 2621

ANDY RAO  
PRIMARY EXAMINER

asr  
May 11, 2006